

We claim:

- Sub B1
1. A process for preparing an aqueous dispersion of plastics additive polymer particles, comprising the steps of  
emulsion polymerizing one or more ethylenically unsaturated monomers  
in an aqueous medium in the presence of a free radical redox  
initiator system, wherein the free radical redox initiator system  
comprises an oxidizing agent, a reducing agent, and from 0.01 to  
5.00 ppm based on monomer weight total iron and copper metal ion  
species.
  2. The process according to claim 1 wherein the ethylenically unsaturated monomers are polymerized to achieve a polymer molecular weight in the range of from 0.2 to 15 million g/mol.
  3. The process according to claim 1 wherein the aqueous medium has a dissolved oxygen concentration in the range of from more than 0 ppm to 10 ppm as measured relative to the dissolved oxygen concentration in a 0.5 wt. % sodium bisulfite aqueous solution at 20°C under atmospheric pressure.
  4. The process according to claim 1 further comprising the steps of subsequently adding one or more additional monomer mixtures comprising one or more ethylenically unsaturated monomers, and polymerizing the one or more additional monomer mixtures using one or more free radical initiator systems.
  5. A polymeric composition for use in modifying the properties of thermoplastic resins, the composition comprising polymer particles prepared by emulsion polymerizing one or more ethylenically unsaturated

Sub B1  
cont'd

monomers in an aqueous medium in the presence of a free radical redox initiator system, wherein the free radical redox initiator system comprises an oxidizing agent, a reducing agent, and from 0.01 to 5.00 ppm based on monomer weight total iron and copper metal ion species.

5

6. The composition according to claim 5, wherein the one or more ethylenically unsaturated monomers comprise from 55 to 97 weight percent methyl methacrylate, from 3 to 20 weight percent of n-butyl acrylate, and from 0 to 25 weight percent n-butyl methacrylate; and

10

the polymer particles have a polymer molecular weight in the range of from 1 to 15 million.

7. The composition according to claim 6, wherein the polymer molecular weight is greater than 6.5 million

15

8. The composition according to claim 5, wherein the polymer particles each comprise a rubbery core domain and a hard shell domain surrounding said rubbery core domain.

20

9. A thermoplastic resin blend comprising

(a) from 1 to 99 weight percent of a thermoplastic resin; and

(b) from 99 to 1 weight percent of a polymeric composition for use in modifying the properties of thermoplastic resins, the composition comprising polymer particles prepared by emulsion polymerizing one or more ethylenically unsaturated monomers in an aqueous medium in the presence of a free radical redox initiator system, wherein the free radical redox initiator system comprises an

25

oxidizing agent, a reducing agent, and from 0.01 to 5.00 ppm based on monomer weight total iron and copper metal ion species.

10. The thermoplastic resin blend according to Claim 9, wherein the blend  
5 comprises

(a) 100 parts vinyl chloride thermoplastic resin; and

(b) up to 15 phr of the modifying polymeric composition, wherein

the one or more ethylenically unsaturated monomers comprise from  
10 55 to 97 weight percent methyl methacrylate, from 3 to 20  
weight percent of n-butyl acrylate, and from 0 to 25 weight  
percent n-butyl methacrylate; and

the polymer particles have a polymer molecular weight in the range of  
from 3 to 12 million.

11. Articles produced from the thermoplastic resin blend according to any one  
15 of claims 9 or 10.